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ABSTRACT

This study examined the Internet's impact on college students' daily lives and the impact of that use on their academic and social routines. Students from 27 colleges and universities participated. The sample was tested and found to be reflective of the national population of college students. Roughly half the students were given a questionnaire asking questions about their academic use of the Internet; and half were given a questionnaire dealing with their social uses of the Internet. In all, 2,054 surveys were returned. In addition, data was collected by a team of graduate student researchers at the University of Illinois at Chicago observing behavior of college students at 10 Chicago area institutions of higher education. Additional material for the study was based on findings of surveys of Americans about their use of the Internet conducted by Princeton Survey Research Associates in 2001 and 2002 for the Pew Internet & American Life Project. A Summary of Findings at the beginning of this report highlights results under three main findings: college students are early adopters and heavy users of the Internet; college students say the Internet has enhanced their education; and college social life has been changed by the Internet. (AEF)

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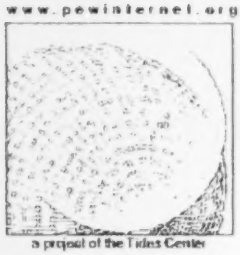

Pew Internet & American Life PROJECT

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The Internet Goes to College

How students are living in the future with today's technology

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Summary of Findings

College students are early adopters and heavy users of the Internet

College students are heavy users of the Internet compared to the general population. Use of the Internet is a part of college students' daily routine, in part because they have grown up with computers. It is integrated into their daily communication habits and has become a technology as ordinary as the telephone or television.

- One-fifth (20%) of today's college students began using computers between the ages of 5 and 8. By the time they were 16 to 18 years old all of today's current college students had begun using computers – and the Internet was a commonplace in the world in which they lived.
- Eighty-six percent of college students have gone online, compared with 59% of the general population.
- College students are frequently looking for email, with 72% checking email at least once a day.
- About half (49%) first began using the Internet in college; half (47%) first began using it at home before they arrived at college.
- The great majority (85%) of college students own their own computer, and two-thirds (66%) use at least two email addresses.
- Seventy-eight percent of college Internet users say that at one time or another they have gone online just to browse for fun, compared to 64% of all Internet users.
- College Internet users are twice as likely to have ever downloaded music files when compared to all Internet users: 60% of college Internet users have done so compared to 28% of the overall population.
- College Internet users are twice as likely to use instant messaging on any given day compared to the average Internet user. On a typical day, 26% of college students use IM; 12% of other Internet users are using IM on an average day.

College students say the Internet has enhanced their education

Internet use is a staple of college students' educational experience. They use the Internet to communicate with professors and classmates, to do research, and to access library materials. For most college students the Internet is a functional tool, one that has greatly changed the way they interact with others and with information as they go about their studies.

- Nearly four-fifths of college students (79%) agree that Internet use has had a positive impact on their college academic experience.

- Almost half (46%) of college students agree that email enables them to express ideas to a professor that they would not have expressed in class, but, some interactions are still primarily face-to-face: Only 19% of students said they communicate more with their professors via email than they do face-to-face.

- Nearly three-quarters (73%) of college students say they use the Internet more than the library, while only 9% said they use the library more than the Internet for information searching.

- About half of all college students (48%) are required to use the Internet to contact other students in at least some of their classes.

- Two-thirds (68%) of college students reported subscribing to one or more academic-oriented mailing lists that relate to their studies. They use these lists to carry on email discussions about topics covered in their classes.

- More than half (58%) of college students have used email to discuss or find out a grade from an instructor.

- Nearly two-thirds (65%) of college students who email professors say they report absences via email.

College social life has been changed by the Internet

The college experience is not only about learning in the classroom, it is also about encountering new social situations and gaining new social skills. College students use the Internet nearly as much for social communication as they do for their education. But just as they use the Internet to supplement the formal parts of their education, they go online to enhance their social lives.

- 42% of college students say they use the Internet primarily to communicate socially.

- Only 10% of college students use the Internet primarily for entertainment.

- Nearly three-fourths (72%) of college students say most of their online communication is with friends.

- Over two-thirds (69%) of college students said they are more likely to use the phone than the Internet to communicate socially.

- But 85% of college students consider the Internet to be an easy and convenient choice for communicating with friends.

- The most popular online social activity is forwarding messages to friends or family, with 37% of college students reporting doing so.

- A significant number of college students use publicly accessible computers on campus for social purposes even when they have their own computer at their disposal: 33% find that the majority of their computer use occurs at school and outside their homes or dorm rooms.

College Students' Internet Use: Background

College students are a unique population. Occupying a middle ground between childhood and adulthood, between work and leisure, college students have been at the forefront of social change since the end of World War II. They were among the first in the U.S. to use the Internet for communication, recreation and file sharing, and the first to have regular broadband Internet access. Internet use first became widespread on college campuses in the 1990s, and in many ways the Internet is a direct outcome of university-based research. Yahoo!, Napster and many other Internet tools were created by college students, and, while the vast majority of college students are simply Internet users, as a group they can be considered pioneers. Studying college students' Internet habits can yield insight into future online trends.

The goal of this study was to learn about the Internet's impact on college students' daily lives, and to determine the impact of that use on their academic and social routines. To meet those goals, the researchers used three approaches. First, surveys were randomly distributed to college students at a wide range of two-year and four-year public and private colleges and universities in the continental United States. Students from 27 colleges and universities participated. This sample was intended to produce results that would correspond to the demographics for all U.S. college students as reported in *The Chronicle of Higher Education*'s annual almanac issue.[1] The sample was tested against known population parameters (gender, race, age) and found to be reflective of the national population of college students. Roughly half the students were given a questionnaire asking questions about their academic use of the Internet; and half were given a questionnaire dealing with their social uses of the Internet. In all, 2,054 surveys were returned. For results based on the total sample, one can say with 95% confidence that the error attributable to sampling and other random effects is plus or minus 2 percentage points. This study focused on traditional college students, ones who are seeking a college degree and who devote much or all of their time to their studies.

Second, a team of graduate student researchers at the University of Illinois at Chicago was recruited to observe the behaviors of college students at 10 Chicago area institutions of higher education. The researchers were trained in ethnographic methods of observation and data collecting, and rotated the times of the day and days of the week they spent in various public settings where college students could be found using the Internet. Third, additional material was based on the findings of surveys of Americans about their use of the Internet conducted by Princeton Survey Research Associates in 2001 and 2002 for the Pew Internet & American Life Project.

There are nearly 14,500,000 students enrolled in colleges and universities across the country according to recent figures from the 2002 *Chronicle of Higher Education*, making up roughly 5% of the U.S. population. The demographic profile of today's

[1] *The Chronicle of Higher Education*, Almanac Issue 2001-2, 158(1), August 31, 2001 and Almanac Issue 2002-3, 159(1), August 30, 2002.

college students is not much changed over the past decade. They are predominantly white (68%) and there are slightly more women than men enrolled in college (56% of college students are women). The majority (59%) are full-time students. Most (71%) attend their first choice of college, and 79% attend college in their home state. The majority (52%) consider themselves "middle of the road" politically.

One characteristic that sets them apart from past generations of college students is their degree of familiarity with the Internet. Today's typical college student was often introduced to the Internet at a relatively early age. This year's 18-year-old college freshmen were born the year the PC was introduced to the public, and they are less aware of a "pre-Internet" world as they are of one in which the Net is central to their communication. Surveys of college students conducted for this report found that one-fifth (20%) reported that they began using computers between the ages of 5 and 8 and by the time they were 16 to 18 years old all of them had begun using computers. About half (49%) first began using the Internet at college, and half (47%) first began using it before entering college. The great majority (85%) of college students own their own computer, and two-thirds (66%) use at least two email addresses.

Three-quarters (74%) of college students use the Internet four or more hours per week, while about one-fifth (19%) uses it 12 or more hours per week. This is somewhat higher than the amount of time most students devote to studying: Nearly two-thirds (62%) reported studying for classes no more than 7 hours per week, while only 14% reported studying 12 or more hours per week.

Data from nationwide telephone surveys conducted by Princeton Survey Research Associates for the Pew Internet & American Life Project also show that Internet penetration is much higher than it is among the general population (Table 1).

Table 1 – Have you ever gone online?

	College students (n)	General Population (N)
All respondents	86%	59%
Men	87%	62%
Women	85%	56%
Whites	90%	61%
Blacks	74%	45%
Hispanics	82%	60%

Source: N=2,501 for the Pew Internet & American Life Project Survey June 26-July 26, 2002. The margin of error is ±2%. Small "n" is the 1,092 college students interviewed in PIP 2001 surveys of 16,125 Americans. Margin of error is ±3%.

In many cases, the kinds of online activities college students pursue vary in degree from the general population. The differences in Internet use between college students and the overall population become most clear when examining in detail the leisure activities online Americans pursue. College Internet users are twice as likely to have ever downloaded music files when compared to all Internet users (60% of college Internet users have done so, compared to 28% overall). And, college Internet users are three times as likely to download music on any given day (14%, compared to 4% of the overall population of Internet users). Fifty-nine percent of college Internet users have listened to music online while only 39% of the overall population of Internet users has done so. On any given day, college Internet users are twice as likely as

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the average Internet user to listen to music online. And another example: 78% of college Internet users say they go online for fun compared to 64% of all Internet users.

College students also lead other Internet users in *file sharing* of all kinds. Forty-four percent of college Internet users report sharing files from their own computers while 26% of the overall population of Internet users has shared files. The sharing of files other than music is also greater among college Internet users – 52% of them have downloaded files other than music while 41% of the overall population of Internet users reported doing so.

College Internet users are heavier users of instant messaging and online chat than those in the overall online population. While about half of all Internet users have sent instant messages, nearly three quarters of college Internet users have done so, and college Internet users are twice as likely to use instant messaging on any given day compared to the average Internet user. While a somewhat less popular activity than instant messaging, online chat is still doubly as common among college Internet users.

At the same time, there are some similarities between college students' use of the Internet and that of the general population's Internet use. On a typical day, 57% of college students with Internet access actually go online for some activity other than email. The same proportion of U.S. Internet users are online on any given day. During a typical day, college students spend roughly as much time online as other Internet users do. And the amount of experience college students have online (the number of years they have used the Internet) is roughly the same as the overall American Internet-using population.

Table 2. Students use the Internet MOST OFTEN to:	
Communicate socially	42%
Engage in work for classes	38%
Be entertained	10%
Communicate professionally	7%
Not sure/Don't know	2%
Source: Pew Internet & American Life Project College Students Survey, n=1021. Margin of error is ±3.5%.	

It is important to note, too, that although activities like downloading files and using instant messaging may be categorized as "leisure," they can also be important learning activities. They set trends for the types of skills that will be important in the future. For example, learning how to manage a file-sharing system or navigate in a real-time chat can be complicated tasks that teach college students valuable technical skills they might need in the workplace.

Furthermore, unlike the general public, college students have mitigating circumstances that directly affect how they use the Internet to communicate with others. A large part of the college experience is learning to develop and maintain personal and professional relationships. College students are expected to interact with professors and fellow students at a different level from what they had previously experienced. They must learn to integrate the Internet into new forms, patterns and habits of communication.

In regard to academic work, the Internet has introduced considerable change for college students. It has opened up new academic possibilities between students. Online study groups allow students who do not live in the same vicinity to still meet and discuss class

work. Electronic mail allows them to turn in assignments, communicate with professors, peers and parents at any time, day or night, and maintain contact easily with friends from home and high school who are attending other universities. The Internet allows social connections already forged to continue to be cultivated in addition to allowing new relationships to be formed.

But though college students as a group have grown up using tools such as instant messaging, chat rooms and electronic mail, little has been done to determine the effect of the Internet socially, as well as academically, on college students. Is it readily used or do many students depend on the more traditional method of communicating over long distances—the telephone? Has the Internet and electronic mail helped improve social connectedness for college students? Are college students more comfortable with the Internet than others are? What can be learned from college students' Internet use about the shape of Internet use to come?

Academics and the Internet

American universities can claim a great deal of the credit for the Internet's initial development, but it was not until the 1990s that universities, along with government and industry, had to adjust to the Internet's growth and increased use. Since then, universities have made the Internet widely available to students and faculty and it has been implemented in universities' business and educational practices. However, distance learning projects have not found much success and universities continue to struggle to find effective ways to employ the Internet in formal ways as a classroom tool.

Table 3. The Internet has had a positive impact on my college academic experience in general	
Strongly Agree	34.3%
Agree	44.2%
Neutral	16%
Disagree	3%
Strongly Disagree	.5%
Don't Know/Not Sure	2%
Source: Pew Internet & American Life Project College Students Survey, n=1032. Margin of error is ±3.5%.	

College students seem generally positive about the Internet and its impact on their educational experience. The majority of college students (89%) have a positive attitude toward the Internet and its communication tools. They are comfortable with Internet communication, and even report finding enjoyment while using it for academic and personal reasons. Their Internet habits are split between academic and social uses, and they find it functional for both purposes.

Students and Professors Online

An overwhelming number of students feel that Internet communication has positively enhanced their college academic experience. Nearly four-fifths of college students (nearly 79%) agree or strongly agree that Internet use has had a positive impact on their college academic experience.

And, most students feel their relationships with their professors have been positively affected by email and Internet communication in general. Only 2% said email has had a

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negative impact on their relationship with professors. Interestingly, these good feelings stem from fairly limited email contact. Only 19% of students said they communicate more with their professors via email than face-to-face. And just 11% of college students said they contact their professors via email once or twice a week and about a third (34%) said they contact their professor via email once every two weeks. Fifty-one percent seldom contact professors via email.

Other research by the Pew Internet & American Life Project has shown that as users increase their experience online, they are more likely to use email to communicate about serious topics. College students show similar traits; nearly half of them (46%) agree that email is a communication tool that allows them to more freely express their ideas to professors.

Professors, however, tend to use email a significant amount to keep in contact with students. Nearly 9 out of 10 (87%) college students have been contacted by professors via email. Slightly more students (89%) said professors use email to communicate class announcements. But only 11% of college students said they contact their professors via email once or twice a week. About one-third (34%) said they contact their professor via email once every two weeks. Just over half, 51%, said they rarely initiate email communications with professors, limiting their efforts to contacting them to once or twice a semester at most. Infrequent though that contact may be, most students at one time or another do email a professor. Only 4% say they never communicate with professors via the Internet.

A Generation Gap?

Colleges and universities might be experiencing an Internet generation gap between professors and students in terms of their Internet usage interests or abilities. Surprisingly, only about half (47%) of college students said they are required to use email in their classes. About the same number (48%) are required in at least some of their classes to use the Internet to contact other students. It is likely that there is still some reluctance among university faculty to adopt Internet technology and put it to use in the classroom. Universities have begun training faculty and staff in Web-friendly applications such as WebCT and Blackboard that allow faculty to easily create class Web sites complete with discussion boards, grade information and homework tools. It seems, however, that it may still be necessary to incorporate basic training about using the Internet as a communication tool for teacher-student interaction.

When professors do deal with students via the Internet, they are much more likely to use email than newer Internet tools such as instant messaging, chat, Web boards. Students primarily use email to set up appointments (62%) with professors, discuss grades (58%), or get clarification of an assignment (75%). Discussion boards were the only other online communication tools that students reported having used in any significant numbers for the purpose of communicating with professors, with 22% having used one. Only 5% of students have used chat or instant messaging tools to communicate with professors online. Use of such tools would require a similar, synchronous, time commitment on the part of both student and professor as offline face-to-face interaction. Indeed, email is the

primary tool for student/professor Internet communication, perhaps as a matter of convenience and practicality, but also possibly due to a lack of knowledge about other Internet options on the part of professors.

The Professor – Student Relationship

Generally, today's students still deal with professors in the classic way: face-to-face. And the Internet is often used to supplement those encounters. Fifty-four percent of students said they communicate less with their professors via email than face-to-face and they often use email to set up those encounters. Some 55% of college students reported that email is useful for arranging these face-to-face interactions. College students do not necessarily feel that Internet communication has personalized their relationship with their professors. When asked if they felt they knew their professors better because of email, students' feelings were split, with 25% agreeing that they knew their professors better and 28% disagreeing. Students' feelings were also split when asked if they felt their professors knew them better because of email (32% agree, 29% disagree). But regardless of quantity or quality of email communication, the majority (56%) of students believe that email has enhanced their relationship with professors. Only 2% believe email has had a negative impact and 41% think email has not affected their relationship with professors.

The Content of Student – Professor Co nmunication

The Internet seems to provide a comfort able means for students and professors to discuss housekeeping details of the classroom. Topping the list are homework assignments and grades outside of the classroom. Three-quarters (75%) of students have used email to get additional information and clarification about an assignment. No matter their collegiate standing, students are equally enthusiastic about using email for the purpose of assignment clarification.

Table 4. Email Use for Clarification of Homework Assignments

	Have used email to tell my professor I need clarification of an assignment
All college students	77%
Freshmen	74%
Sophomores	81%
Juniors	80%
Seniors	76%

Source: Pew Internet & American Life Project College Students Survey, n=1032. Margin of error is ±3.5%.

More than half (58%) of college students have used email to discuss or find out a grade from an instructor. While to some this number may seem low, the Federal Educational Rights and Privacy Act's (FERPA) prohibition on disclosure of student grades without a students' consent has likely caused some faculty to refuse to discuss grades online. Web-based technologies such as Blackboard and WebCT have allowed students and professors to post grades online by providing student users with unique identification names and numbers and a password for security purposes. In theory, only the student can access the information. But faculty adoption of those technologies is not yet widespread. Posting students' grades online is still about as rare as posting them in the hallway or on a professor's office door, thanks to FERPA.

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Such prohibitions have no effect on other student – professor communication and professors are actively using email to contact students. A majority of college students (60%) have been contacted by a professor via email for the purpose of providing coursework feedback. Professors are also taking advantage of the one-to-many capabilities of email for class information management. Four-fifths (82%) of college students have been contacted via email by professors providing assignment information. Nearly 9 out of 10 (89%) college students report having received class announcements from professors via email. The Internet has made it easier for professors to provide feedback and information in a relatively easy manner. If a professor wants to cancel a class, for example, he or she can simply send a message via email to let students know ahead of time. In the past, if a class was cancelled on short notice, students usually found out about it when they arrived at the classroom and saw a note on the chalkboard. Professors are able to set up email lists and email address books so that they can contact students anytime. This allows for information to be sent at any time and professors use it to pass on "housekeeping" information as well as valuable educational information. By taking care of such matters online, it may be that classroom time is freed for teaching. However, email does not allow for immediate contact, as the connection is made only when the message is picked up.

As we have found with other Internet users, college students at times like to use email to deliver bad or unpleasant news. Twenty-five percent of college students have used email to report to an instructor that they were not able to finish a homework assignment. And nearly two-thirds (65%) of college students who email professors said they report absences via email. The reason for reporting absences seems to be the convenience of the medium for students who are ill or dealing with a personal emergency. Although the telephone would also be a viable option for these circumstances professors are not always easily reached via phone, email provides students with a written record of communication, potentially useful for confirming notification of absences. It may also be that students hope that by informing an instructor of their absence in advance the absence will be excused.

But the use of email for bad news usually stops there. It does not appear that many students use the Internet as a means of venting their academic frustrations, or discussing bad news with professors. Only 7% of students reported having used email to complain to a professor about a class or classmates. Students are equally reluctant to use email for this purpose no matter their year in school. Only 4% reported having used email to complain to an instructor about course workload. However, two categories of "bad news" to professors are substantially higher than these.

The Internet seems to be making an overall positive impact on student-professor interaction. Almost half (46%) of college students agreed that email enables them to express ideas to a professor that they would not have expressed in class, and only17% disagreed with the notion that email enables better expression of ideas to a professor. Those who felt positively about email communication from a professor tended to be younger students. Fifty-five percent of those who strongly agreed that email allowed expression of ideas to a professor that they would not have expressed in the classroom

were age 20 or under, while those who most often strongly disagreed were older. Half of college students agreed that the Internet has had a positive impact on their relationship with professors, while only 7% disagreed with this statement. Over half (56%) of college students feel email has enhanced their relationships with professors, while a mere 2% feel it has had a negative impact.

The Classroom vs. Cyberspace

There appears to be little interest among traditional college students (those 18 to 22 years old) to abandon the classroom and take courses online. Only 6% of students took online courses for college credit, and of those only half (52%) thought the online course was worth their time. Half of the students who took an online course said they believed they learned less from the online course than they would have from an on-campus one. Based on these findings, it is clear that for students already enrolled in traditional college courses, online education has a long way to go before it might challenge the traditional classroom.

While formal distance learning has not replaced the classroom, informal learning often takes place online. The Internet is used in many cases to supplement students' academic activities and provide some alternatives for professors and students looking to bring new life to familiar educational experiences. For example, two-thirds (68%) of college students report that they have subscribed to one or more academic-oriented mailing lists that relate to their studies. They use these lists to carry on email discussions about topics covered in their classes.

Study Habits

The convenience of the Internet may be taking some of the trouble out of working on class projects for college students, but some educators and librarians are concerned it may also be creating poor research habits.

Data from the Association of Research Libraries shows that reference queries at university libraries have greatly decreased during and since the late 1990s. The convenience of the Internet is likely tempting students to rely very heavily on it when searching for academic resources. In our own research, an overwhelming number of college students reported that the Internet, rather than the library, is the primary site of their information searches. Nearly three-quarters (73%) of college students said they use the Internet more than the library, while only 9% said they use the library more than the Internet for information searching. In response to a general question about overall library use, 80% of college students reported using the library less than three hours each week.

Table 5: Comparing online information searching to library use

Use Internet more than library	73%
Use Internet and library about the same	16%
Use Internet less than library	9%
Don't know	2%

Source: Pew Internet & American Life Project College Students Survey, n=1032. Margin of error is ±3.5%.

Traditionally, and ideally, the library has been a place where students go to study and collect materials used for papers, presentations and reports. Of course, people often

socialize at the library, too. Nowadays, the Internet has changed the way students use the library. Students tend to use the Internet prior to going to the library to find information. During direct observations of college students' use of the Internet in a library and in campus computer labs, it was noted that the majority of students' time was not spent using the library resources online. Rather, email use, instant messaging and Web-surfing dominated students computer activity in the library. Almost every student that was observed checked his or her email while in the computer labs, but very few were observed surfing university-based or library Web sites. Those students who were using the computer lab to do academic-related work made use of commercial search engines rather than university and library Web sites.

Many students are likely to use information found on search engines and various Web sites as research material. Plagiarism from online sources has become a major issue on many campuses, and faculty often report concerns about the number of URLs included in research paper bibliographies and the decrease in citations from traditional scholarly sources. A great challenge for today's colleges it how to teach students search techniques that will get them to the information they want and how to evaluate it.

University libraries have tried to adapt to the information resources that the Internet offers by wiring themselves for students' demands. For example, computers are scattered throughout libraries to allow students to search for resources easily. When students visit the library, it is our observation that they use electronic resources more than paper resources. Students often wait in line to use computers at peak times during the semester. We frequently found that libraries designate different computers for research, for checking email or for public access. Although academic resources are offered online, it may be that students have not been taught, or have not yet figured out, how to locate these resources. Students in computer labs and classrooms were heard by observers to say that it is easier to find resources using the Internet, an observation echoed by educators and librarians who worry that students are less adept at recognizing credible, academic sources when conducting research. While few universities require college students to take courses on information seeking, many include a session on it during freshman orientation meetings. College students seem to rely on information seeking habits formed prior to arriving at college. In Teenage Life Online, a Pew Internet & American Life Project report published in June 2001 (available at http://www.pewinternet.org/reports/toc.asp?Report=36), it was found that 94% of online teens have used the Internet for school research, and 71% used it as a major source for a recent school project.

Internet Use at "Home"

Traditionally, undergraduate college students live in an on-campus residence hall, apartment, fraternity or sorority house, while graduate and professional students occupy apartments or homes on the outskirts of campus. However, increases in enrollment and expectations for better housing have caused the number of undergraduate students reporting residence off-campus to grow.[2] Many college students now report most of their

[2] Kellogg, Alex. P. (2001, October 19). "Facing More, and Possibly Pickier, Students, Colleges Renovate and Add Housing." Chronicle of Higher Education, p. A37.

computer activity takes place at home and in dorms. Well over one-half of college students (59%) use their home computers the most, a finding consistent with the 69% of students who reported living at home with parents or in an off-campus apartment or house. Additionally, an overwhelming 93% of college students reported using their home computers the most when checking email. The likely reason for this is that Internet use has been a home habit from their teen days. The Teenage Life Online study from 2001 found that 83% of online teens reported logging on from home most often. The convenience of having a computer in a setting quieter than a school computer lab, one within easy reach of other amenities (like the refrigerator) also contributes to the heavy home computer use.

Students may also value their privacy and prefer to use computers they own, in private, rather than ones in public places like campus computer labs where the computer monitor is readily visible to others. Observations in campus computer labs show that students do not expect to spend a great deal of time in the facility. For instance, we noted that particularly during weekdays fewer than 1 in 5 students took off their coats or backpacks and made themselves comfortable at a computer terminal. Some would not even sit down, preferring to quickly check messages, read one or two important ones, and perhaps quickly type a reply before leaving. Often, students come to a campus computer lab between classes to check their email, surf the Web or chat online with friends or family, leaving the labs within ten to fifteen minutes of their arrival. At night observers noted fewer students in computer labs, but the ones who were present typically had books and papers spread out and appeared to be spending at least a half-hour, usually more, at the computer.

Study Groups

Study groups are a common feature of college life, and have been featured in popular culture in movies and TV shows like "The Paper Chase" and "Beverly Hills 90210." Our observations showed that it is common for students to gather in groups and work in a computer lab for a prolonged period of time. While in groups, students often appear to be working on academic tasks although most often one student is at a computer terminal typing while the remaining group members are socializing and contributing information when asked by the typist. Students were also observed positioning themselves at adjacent terminals in order to compare work on assignments easily.

At the same time, virtual study groups are commonplace. The Internet is allowing students who live off campus to maintain a relationship with their academic environment from a distance. For instance, the Internet provides an easy way to collaborate, relay and clarify information with other students. Three-fourths (75%) of college students reported using the Internet communicate with classmates about group projects. About two-thirds (69%) of college students reported that email is a useful way to keep in touch with classmates regarding their classes. Almost one-third (31%) of them said they emailed classmates frequently, at least once a week or more. Most students (60%) agree/strongly agree that the Internet has been beneficial to the relationships they have with classmates. Only 4% believe that the Internet has had a negative impact on those relationships.

The Internet and College Social Life

College students' social experiences account for a great deal of their learning outside the classroom. It is not surprising to find that college students use the Internet more as a medium for social communication than for educational or professional communication. But while 42% of college students say they use the Internet primarily to communicate socially, nearly as many (38%) use it primarily to engage in work for classes. Only a modest portion use it primarily for entertainment – apart from their socializing. The Internet has certainly found its niche among the many media available to college students, but it is one among many, and it is in the main a useful tool rather than a pastime or plaything for them.

Students Socializing Online

When asked with whom they communicate most on the Internet, nearly three-fourths (72%) of college students answered "friends," and much smaller proportions of college students use most for communication with family, romantic partners, or professors.

It is clear, however, that the Internet is not the only means of communication for college students, and in some cases it is not even their first choice for it. Over two-thirds (69%) of college students said they are more likely to use the phone than the Internet to communicate socially, even though 85% of college students consider the Internet to be an easy and convenient choice for communicating with friends. The widespread use of cell phones among college students (the FCC estimates 61% of those 18 to 24 years old own a cell phone) and the telephone's immediacy make it a primary choice for students' social communication. College students' experience with the phone likely also makes them believe it more useful. They are accustomed to reaching someone right away and to recognizing their voice, elements of interaction the Internet does not readily communicate. Furthermore, since over half (58%) of college students use a computer most at home and home computers (as opposed to school computers in computer labs) are not always on or connected to the Internet, picking up a telephone can be easier and more convenient than dialing up an Internet connection. Email is often considered by these students to be a means of sending short messages or a way to schedule telephone or face-to-face conversations.

Table 6. With whom do students communicate most while using the Internet?

Friends	72%
Family	10%
Professors	7%
Romantic Partners	6%
Work Colleagues	5%

Source: Pew Internet & American Life Project College Students Survey, n=1021. Margin of error is ±3.5%

Time Spent With Friends Online

To communicate online with friends, students predominantly use email, but instant messaging (IM) is also widely used; 62% of college students use email as the primary Internet medium while 29% use an instant messaging program. College students are frequently looking for email, with 72% checking email at least once a day. This suggests

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that the use of email has very much become part of the daily routine for many college students. Nearly all college students (95%) reported using email for social communication at least once a week, and 21% said they use it at least once a day for that purpose. Other Internet tools like chat rooms, message boards, and newsgroups are practically unused by the students surveyed.

The most popular online social activity consisted of forwarding messages to friends or family, with 37% of college students reporting doing so. Chatting – or conducting online dialogues – with friends on campus is the next most popular thing to do (23% of college students) and communicating with boyfriends or girlfriends on or off campus was third (11%).

Table 7. Internet Communications Tools Used Most by College Students	
Email	62%
Instant messaging	29%
Web boards	5%
Chat rooms	2%
Newsgroups	1%
Source: Pew Internet & American Life Project College Students Survey, n=1021. Margin of error is ±3.5%.	

Students spend a good portion of their total Internet time on social communication. Our analysis suggests that many college students spend between one and three hours online per week in social communication. The majority of students reported that they either use the Internet less than 3 hours a week (31%) or 4 to 7 hours a week (38%). Of those who reported they spend less than 3 hours a week on the Internet, 45% claimed they spend an hour of that time in social communication, while 41% claimed 1 to 2 hours communicating socially. Of those who reported spending 4 to 7 hours a week on the Internet, 35% claimed they spend only an hour a week in social communication, while 40% spend 1 to 2 hours and a majority of college students (62%) spend 2 to 3 hours communicating for social purposes. At least 25 percent of college students spend as many as 3 or more hours a week communicating socially online.

All this suggests they view the Internet as a functional medium that can used to enrich college students' social environment. Perhaps this is evidence that college students are making a transition from the teen years, when Internet use is mostly oriented toward entertainment, toward adult Internet use dominated by social engagement and information seeking.

Making Friends, Keeping Friends

About one in five (19%) college students said that they had formed a relationship online before meeting someone in person. While this may indicate that college students use the Internet as a means of making friends, it is more likely that they are meeting people on campus online before meeting in them person, rather than meeting absolute strangers not on campus. Some degree of caution and concern for privacy was evident during observations of college students in computer labs. Observers noted that students would on occasion try to prevent others from looking at their computer screen, seeing their printouts, or using a computer until they had fully logged off. There were a few instances when students noticed they were being observed and immediately left the room. Further evidence that college students are at least somewhat cautious about online relationships can be found in their attitude toward using the Internet to search for a roommate – 94 %

said they had never looked for a roommate online.[3]

College students' social circles are quite widespread beyond their immediate campus environment thanks to the Internet. While about one-quarter (24%) reported that they had communicated online most with friends on campus, almost as many (20%) said they communicated online most with friends at other universities. For the most part, however, college students said they communicated online most with friends from high school or childhood (35% reported doing so).

The broad social connections that students are maintaining online suggests to us a similar trend that we have noticed previously in Pew Internet Project research; namely that online social interaction is a supplement rather than a substitute for offline social interactions. College students are using the Internet as a medium to connect with other students they know on campus. Further, they are using it to maintain relationships they have made with friends in high school and at other colleges. Though there are no data from the past to use as a benchmark, it is reasonable to speculate that today's college students are now more likely than their parents when they were in college to stay in touch with high school friends after they have left home. Thus, the number of social ties today's college student maintains is potentially much higher than that of previous generations. In research by Stephanie Kucker at the University of Illinois at Chicago, it was noted that "students are staying tied to their high school relationships over a longer expanse of time and geographic dispersion than before, (and) are hanging on to their high school networks at the day to day level."[4]

Though it might seem difficult for college students to be able to maintain such a broad social circle, the Internet seems to be a "medium of convenience" for them. The most popular social activity in which they engage online is the forwarding of messages to friends or family (37% of college students do so). This allows them to maintain contact without spending a great deal of time composing messages themselves. Fully 85% of college students reported believing the Internet is an easy and convenient way to communicate socially, while only 6% disagreed that it is easy and convenient. In some sense one might consider college students' email forwarding behavior similar to that of sending a greeting card – rather than write the words themselves, they pass along a message written by someone else that might express a sentiment or give information in a quick, convenient manner.

That over one-third of college students are maintaining contact with friends from high school or childhood may at first seem surprising. Common sense might say that given the new friends they make at school that old friends would be supplanted. But for most college students leaving home or entering a new and more challenging environment may motivate an interest in maintaining social connections formed before they entered college. In addition, most students are going to college in their home states and their high

[3] The number of those who have never looked for a roommate online rises to 97% if we exclude 36 respondents at one university that encourages students to find roommates using a campus Web site.
[4] *Undergraduate E-mail Use for Peer Relationships*, Stephanie Kucker, M.A. Thesis, University of Illinois – Chicago, 1999.

school friends might still literally be in their classes and living in nearby dorms. Indeed, while observing college students in campus computer labs, it was not uncommon to see students communicating in languages other than English and browsing non-English content on Web sites. This suggests that the Internet is allowing students to maintain a connection with their hometown friends, family, and culture, even when those people and interests are thousands of miles away from the student's campus.

Multitasking

Despite the fact that the great majority (83%) of students own their own computer, one third of students (33%) find that the majority of their computer use occurs at school. College students tend to use the computer that is most convenient, one that is available when they want to go online, rather than wait to go home to go online. A significant number of college students use publicly accessible computers on campus for social purposes even when they have their own computer at home or their dorm room.

This is reflected in the observations we made of student activities in college campus computer labs. In particular, there was evidence of "multitasking" going on in the computer labs. For example, students used multiple programs at once, logging in to an instant messaging program while working on papers, browsing Web pages while working on an assignment.

Furthermore, it appears that multitasking is not confined solely to online interaction. On a Friday afternoon when classes were ending for the week, students were often observed congregating in the computer labs in groups ranging from two to seven people. People sitting next to each other shared interesting Web sites they had found, scores for an online game they were playing, or pictures they had received via email of a sorority party they had attended together. Some appeared to be checking their email in order to make plans with friends for the night or the weekend.

Socializing fits into college students' work environment, both online and offline (we observed frequent interruptions in the lab from friends stopping by in person.). Meeting people in the lab before going elsewhere together, or working on projects at adjoining computers so that social interaction occurs during actual study work, suggests again that the behavior that students present online is not suddenly a new technique, rather it is a supplementary method to reproduce the kinds of multiple interactions that students performed offline. Today's college students have had long experience with multitasking well before the Internet came into their lives (one can easily imagine them talking on the telephone, watching television, reading a magazine, and having a friend in the room). Students are using such tools as IM clients and email as new media to reproduce the social interaction with which they have had previous experience.

The spread of wireless access on college campuses will likely tip the scales further toward multitasking as students are able to use email, IM and other Internet tools anywhere, any time, on campus. It will be most interesting to assess the impact of ubiquitous access on classroom teaching and on socializing, as well as on existing campus computer infrastructure like public computer labs and networks.

Implications of College Students' Internet Use for the Future

There are several key points that college students' Internet use today might indicate about what future online behavior may be like when the current cohort of students graduates and moves into the adult world and the workforce.

One very important feature of college life that students have come to expect is near-ubiquitous Internet access. College students are among those most eager to exploit high-speed broadband connections. As they graduate and cease to have high-speed access in dorms and computer labs, cable and DSL access become practically the only means by which they can continue to engage in their habits of sharing files, watching and listening to streaming media, and having "always on" access. Many college students have learned to live in an environment where they expect to be in touch with others throughout the day, to never be far from Internet access, no matter the work or social situation they encounter. They could carry those expectations with them after graduation.

Today's college student will be well prepared to work in a wired world. Virtually all of them will have experience with email and the Web, and most will be familiar with a wide variety of software packages. Many will also be well versed in peer-to-peer file sharing and online collaboration.

One important unresolved question is how much today's students will rely on online tools to advance their skills and polish their academic credentials. Distance learning is not yet important enough for them to have adopted wholly new methods of learning. Their current behaviors show them using the Internet as an educational tool supplementing traditional classroom education, and it may be difficult to convince them to abandon the traditional setting after they have had the kinds of attention afforded them in the college classroom.

Nevertheless, the degree to which college students use the Internet as an information and reference source suggests that they will very likely continue to turn to the Internet for information in the future. They are already heavy consumers of online health, financial and travel information, and may come to trust the Internet as an information source more than the generations preceding them. In short, the Web has become an information cornerstone for them.

But the high degree to which today's college students perceive the Internet as something used for fun means that they will not limit their use to work or learning. College students are a group primed for interactive entertainment. Although most did not report the Internet as being a primary entertainment device in their lives, the degree to which they use it for socializing makes the Internet an important leisure activity. Today's college students will be an important force for the future of online interaction, gaming and other forms of online entertainment.

The degree to which today's college students are becoming accustomed to sharing files (they are twice as likely as the average Internet user to download music) may lead to difficulties for media industries intending to implement and enforce anti-copying technologies. Many college students now expect to sample, if not outright pirate movies, music, software, and TV programs. They may prove to be choosier consumers than previous generations, basing their purchases on previewing media via file sharing.

As today's college students move into the workplace and their own homes, convenience will continue to drive adoption of Internet technologies at work and at home. Their habit of using the most convenient computer, the one "at hand," to log on to the Internet will continue. So, too, will this generation mix work and social activity online and further blur boundaries between work and home, work and leisure. Multitasking will form part of the "convenience" mix for this generation as it matures. Opening and using multiple applications simultaneously (instant messaging, email, Web, word processing, spreadsheets) will be routine, and switching between those applications will be seamless in practice, and a market for integration of applications exists.

Although this study did not specifically address college students' use of wireless Internet access because too few campuses have deployed wireless networks, observations of students' use of existing wireless networks and anecdotal evidence does provide some information with which to envisage some of its implications. Issues readily apparent with the spread of cell phones, such as etiquette and distraction, are likely to emerge as students are able to access the Internet anywhere, including in classrooms. Indeed, instructors may prove to be a barrier to adoption of wireless Internet access in the classroom. Many college teachers respond very negatively to cell phones ringing in class or to the sounds of students typing on the keyboard of a laptop, and it is possible that many, if not most, will want to prohibit wireless Internet access during class time. The deployment of wireless networks on college campuses should create a fertile ground for research into new forms of Internet use.

Finally, today's college students will likely continue to maintain a very wide social circle. Just as they use the Internet to keep in touch with friends from high school and with family, there is every reason to believe that those relationships, along with ones made while in college, will be maintained long after they graduate. Whether the breadth of connections will have consequences for the depth of connections these college students enjoy is a matter for sociologists to determine in the future.

Methodology

This report is based on the findings of two surveys given to college students at two-year and four-year public and private colleges and universities in the continental United States. Paper surveys were randomly distributed at a wide range of higher education institutions by researchers at the University of Illinois at Chicago between March 2002 and June 2002. Conducting a survey in this manner allowed researchers to guarantee that participants would remain anonymous as the surveys asked questions regarding students' feelings and attitudes about certain aspects of Internet usage as well as other information that might be considered personal or sensitive. Paper surveys also made it possible for researchers to reach college students in a manner that telephone surveying would not have allowed.

Surveys were distributed to undergraduate and graduate students enrolled in degree-seeking programs at 27 institutions of higher education across the United States. The sample was intended to produce results that would correspond to the demographics for college students reported in *The Chronicle of Higher Education*'s annual almanac issue.[5] The sample was tested against known population parameters (gender, race, age) and found to be reflective of the national population of college students as reported by *The Chronicle*. Each student was asked to fill out either a survey about his/her academic uses of the Internet or his/her social uses of the Internet. In all, 2,054 surveys were returned. For results based on the total sample, one can say with 95% confidence that the error attributable to sampling and other random effects is plus or minus 2 percentage points. In addition to sampling error, question wording and practical difficulties in conducting surveys may introduce some error or bias into the findings.

Ethnographic data was collected by a team of graduate student researchers at the University of Illinois at Chicago. The researchers were recruited to observe the behaviors of college students at numerous Chicago area institutions of higher education. The researchers were trained in ethnographic methods of observation and data collecting, and rotated the times of the day and days of the week they spent in various public settings where college students could be found using the Internet. Observations took place at the same time the surveys were conducted, between March 2002 and June 2002.

Additional material is based on the findings of a survey of Americans about their use of the Internet. These results are based on data from telephone interviews conducted by Princeton Survey Research Associates in 2001, among a sample of 16,125 Internet users, 18 and older, who have broadband Internet access. For results based on the total sample, one can say with 95% confidence that the error attributable to sampling and other random effects is plus or minus 2 percentage points. In addition to sampling error, question wording and practical difficulties in conducting telephone surveys may introduce some error or bias into the findings of opinion polls. At least 10 attempts were made to complete an interview at every household in the sample. The calls were staggered over times of day and days of the week to maximize the chances of making contact with a

[5] *The Chronicle of Higher Education*, Almanac Issue 2001-2, 158(1), August 31, 2001 and Almanac Issue 2002-3, 159(1), August 30, 2002.

potential respondent. Interview refusals were re-contacted at least once in order to try again to complete an interview.

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